

9/14/16

"It is the empty space within the vessel that makes it useful" -Tao Te Ching

HW: "Dividing Radicals" worksheet #3, 6, 9, 12, 15, 18, 21, 24, 27
 Test 1 on Tuesday 9/20

AIM: How do we divide with radicals?

Warm Up:

Simplify the following

1) $8\sqrt{8} + 2\sqrt{24} - 2\sqrt{18}$

$\sqrt{4}\sqrt{2}$
 $\sqrt{4}\sqrt{6}$
 $\sqrt{9}\sqrt{2}$

$8 \cdot 2\sqrt{2} + 2 \cdot 2\sqrt{6} - 2 \cdot 3\sqrt{2}$

$16\sqrt{2} + 4\sqrt{6} - 6\sqrt{2}$

$10\sqrt{2} + 4\sqrt{6}$

2) $(3 - \sqrt{2})^2 = (3 - \sqrt{2})(3 - \sqrt{2})$

Box

	3	$-\sqrt{2}$	
9	9	$-3\sqrt{2}$	3
$-6\sqrt{2}$	$-3\sqrt{2}$	$\sqrt{4} = 2$	$-\sqrt{2}$

2

$9 - 6\sqrt{2} + 2$

$11 - 6\sqrt{2}$

When **dividing** radicals, you must divide the numbers **OUTSIDE (O)** the radicals **AND** then divide the numbers **INSIDE (I)** the radicals.

$$\text{EX)} \quad \frac{4\sqrt{15}}{2\sqrt{3}} = \frac{4}{2} \cdot \sqrt{\frac{15}{3}} = 2\sqrt{5}$$

$$3) \sqrt{27a} \div \sqrt{3a^3}$$

⊗ Divide then Simplify

$$\frac{\sqrt{27a}}{\sqrt{3a^3}} = \sqrt{\frac{27a}{3a^3}} = \sqrt{\frac{9}{a^2}} = \frac{\sqrt{9}}{\sqrt{a^2}} = \left(\frac{3}{a}\right)$$

We don't want radicals in our denominator. We need to Rationalize.
(Get the radical out of the denominator)

$$4) \frac{\sqrt{15}}{\sqrt{45}} = \sqrt{\frac{15}{45}} = \sqrt{\frac{1}{3}} = \frac{\sqrt{1}}{\sqrt{3}} = \frac{1}{\sqrt{3}}$$

Need
to
Rationalize

$$\frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{\sqrt{9}} = \boxed{\frac{\sqrt{3}}{3}}$$

(one term)

To rationalize when we have a monomial radical denominator:
Multiply BOTH top and bottom by the radical in the bottom.

$$5) \frac{12\sqrt{10a} + 8\sqrt{15b}}{4\sqrt{5ab}}$$

$$\frac{2}{3} + \frac{5}{3} = \frac{2+5}{3}$$

$$\frac{12\sqrt{10a}}{4\sqrt{5ab}} + \frac{8\sqrt{15b}}{4\sqrt{5ab}}$$

$$\frac{3\sqrt{2}}{\sqrt{b}} \cdot \frac{\sqrt{b}}{\sqrt{b}}$$

$$\frac{2\sqrt{3}}{\sqrt{a}} \cdot \frac{\sqrt{a}}{\sqrt{a}}$$

$$\frac{3\sqrt{2b}}{b} \cdot \frac{a}{a}$$

$$\frac{2\sqrt{3a}}{a} \cdot \frac{b}{b}$$

LCD: ab

$$\frac{3a\sqrt{2b} + 2b\sqrt{3a}}{ab}$$